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## “Smoking Cessation for Pregnancy and Beyond: A Virtual Clinic,” an Innovative Web-Based Training for Healthcare Professionals

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### Abstract

This article provides an overview of an interactive online training designed for healthcare professionals to hone their skills in assisting pregnant women to quit smoking and to remain quit postpartum. The curriculum teaches a best practice approach for smoking cessation, the 5A's, and is based on current clinical recommendations. The program offers five interactive case simulations and comprehensive discussions of patient visits, short lectures on relevant topics from leading experts, interviews with real patients who have quit, and a dedicated website of pertinent links and office resources. The training is accredited for up to 4.5 hours of continuing education credits.

### Introduction

Smoking during pregnancy remains one of the most common preventable causes of infant morbidity and mortality. Women who smoke during pregnancy experience increased risk of pregnancy complications, including placental previa, placental abruption, and premature rupture of the membranes (PROM). In addition, infants of mothers who smoked during pregnancy are more likely to be delivered early and have higher rates of restricted fetal growth, preterm-related death, and sudden infant death syndrome (SIDS).<sup>1</sup> In 2002, 5%–8% of preterm deliveries, 13%–19% of term low-birth-weight deliveries, 23%–34% of SIDS, and 5%–7% of preterm-related deaths were attributable to prenatal smoking in the United States.<sup>2</sup> Infant exposure to secondhand smoke increases the risk for respiratory tract infections (e.g., bronchitis, pneumonia), ear infections, and death from SIDS.<sup>3</sup> Clinicians

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### Disclosure Statement

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention. The authors have no conflicts of interest to report.

who assist pregnant women in quitting smoking until the end of pregnancy and remaining quit after delivery can significantly improve the health of mothers and infants.<sup>4</sup>

Although the U.S. prevalence of smoking during pregnancy has declined in the past decade,<sup>5</sup> prenatal smoking remains unacceptably high, and certain subpopulations of women are particularly at risk. In 2008, data from the Pregnancy Risk Assessment Monitoring System (PRAMS) indicated that 12.8% (95% confidence interval [CI] 12.3–13.3) of women in 29 states smoked during the last 3 months of pregnancy.<sup>6</sup> The variation ranged from 5.1% in Utah to 28.7% in West Virginia (Fig. 1). Prevalence was highest among women aged 20–24 years (19.3%), Alaska Native women (30.4%), women with <12 years of education (22.5%), and women who were Medicaid-insured (22.1%). Another analysis found young white and Alaska Native women 18–24 years who recently delivered a live infant had high rates of smoking before pregnancy (46.4% and 55.6%), suggesting that younger women at risk of pregnancy in certain racial/ethnic groups may have the greatest need for smoking cessation programs.<sup>7</sup> Furthermore, half of women who quit smoking during the last 3 months of pregnancy report relapse to smoking approximately 4 months after delivery.<sup>5</sup>

## Clinical Recommendations

Major clinical guidelines support smoking cessation counseling during pregnancy. The U.S. Public Health Service (USPHS) recommends that clinicians ask all pregnant women about tobacco use and provide augmented, pregnancy-tailored counseling for those who smoke.<sup>8</sup> The USPHS recommends that clinicians offer effective tobacco dependence interventions to pregnant smokers at the first prenatal visit as well as throughout the course of pregnancy.<sup>8</sup> The American College of Obstetricians and Gynecologists (ACOG) recommends that prenatal care providers deliver a brief counseling session for patients who are willing to try to quit smoking.<sup>9</sup> ACOG guidance recommends counseling approaches, such as the 5A's intervention (ask, advise, assess, assist, and arrange), which have been shown to be effective when initiated by healthcare providers.<sup>9</sup>

Although clinical guidelines consistently recommend screening and counseling by prenatal care providers, only half of pregnant smokers receive counseling.<sup>10</sup> Furthermore, only a third of prenatal care providers report delivering recommended cessation interventions in their clinical practice.<sup>11,12</sup> Reasons for the low level of cessation counseling include providers' self-reported lack of awareness of or agreement with existing guidelines, lack of self-efficacy, lack of training, lack of systems to support counseling activities, and lack of patient and provider materials.<sup>11–13</sup> Providers reported that they do not have enough training or confidence in prescribing pharmacotherapy to pregnant or breastfeeding women. In addition, many providers report that they have not received formal training on smoking cessation interventions and have stated the desire to learn more about effective cessation interventions and how to implement smoking cessation programs in their offices.

## A Web-Based Virtual Clinic

To enhance provider confidence and skills in smoking cessation interventions, “Smoking Cessation for Pregnancy and Beyond: A Virtual Clinic” was developed and updated by Dartmouth College Interactive Media Laboratory in collaboration with ACOG and the

Centers for Disease Control and Prevention (CDC). Released in the fall of 2011, the training is designed for healthcare professionals to effectively assist pregnant women and women in the childbearing years to quit smoking. The training program teaches a best practice approach for smoking cessation, the 5A's, and is based on current clinical recommendations from the USPHS and endorsed by ACOG. The program also includes messaging on remaining smoke-free postpartum.

This program offers various learning tools (Fig. 2), including:

- Interactive case simulations and comprehensive discussions of the patient visits
- Short lecture on relevant topics from leading experts, including former Surgeon General Dr. C. Everett Koop. Lecture topics include: the 5A's, nature of addiction, pathophysiology and pharmacotherapy, motivational interviewing, and office systems for smoking cessation
- Interviews with real patients who have quit
- A dedicated website of pertinent links and office resources

In the training, providers can learn about the risks to reproductive health associated with smoking, the benefits of quitting for the mother and fetus, nicotine withdrawal symptoms and how to cope with them, strategies for addressing such patient concerns as weight gain or depressed mood, and issues related to pharmacotherapy use during pregnancy or while breastfeeding. Detailed learning objectives are provided in Table 1.

The interactive patient simulations and case discussions allow health professionals to see the application of the 5A's during prenatal and postpartum visits and with nonpregnant women. Patient simulations include presentation of the patient's past medical history and current medical condition and the patient's description of her current smoking behavior. The training format allows the user to go through each step of the 5A's with the patient. The process is interactive, allowing the user to select options for how to respond to issues as they arise. At the end of each case, the moderator presents a case discussion detailing key learning points.

The training is accredited for up to 4.5 hours of continuing education credits (CME, CNE, CEU, CECH, and CPE). The target audiences are physicians, physician assistants, nurse-midwives, registered nurses, licensed practical/vocational nurses, nurse practitioners, certified health educators, other health educators, pharmacists, health professional students, and other professionals who may interact with women of reproductive age. The cost is \$25.00 per user, and group licensing at reduced rates is available. To access the training, please visit [www.smokingcessationandpregnancy.org](http://www.smokingcessationandpregnancy.org).

## Conclusions

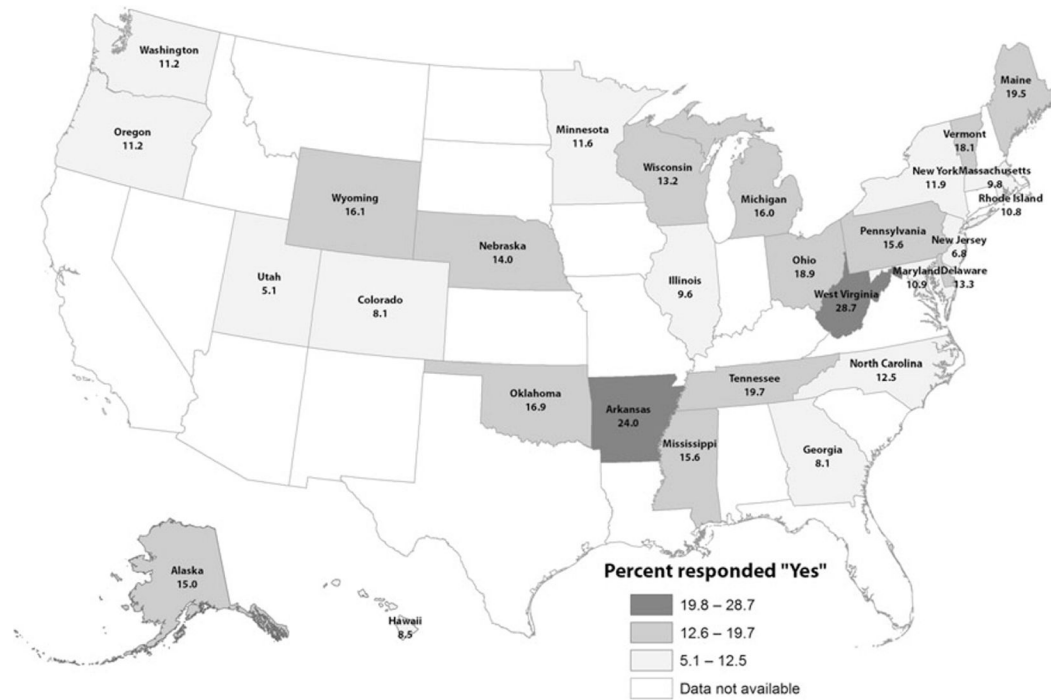
Smoking around the time of pregnancy continues to compromise maternal and infant health. This web-based training program can help providers enhance their skills in helping pregnant women quit smoking and remain smoke-free postpartum. Increased quit among pregnant women to improved health for themselves and their offspring.

## Acknowledgments

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**FIG. 1.**

The percentage of mothers who smoked the last 3 months of pregnancy, Pregnancy Risk Assessment Monitoring System (PRAMS) states, 2008.



**FIG. 2.**  
Virtual clinic screen shot.

**Table 1****Learning Objectives for “Smoking Cessation for Pregnancy and Beyond: A Virtual Clinic”**


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After completing this activity, the participants will be able to:

- 1 Apply a standard method of tobacco cessation counseling, the 5A's, for female smokers before, during, and after pregnancy.
  - 2 Describe the effects of inhaled tobacco smoke on the health of the mother and fetus, at a minimum to include the effects of nicotine and carbon monoxide.
  - 3 Describe the benefits of quitting for the mother and fetus.
  - 4 List the effects of nicotine withdrawal and ways of coping with them.
  - 5 State the risks and benefits of pharmacotherapy for smoking cessation during pregnancy or while breastfeeding.
  - 6 Discuss application of the 5A's for the patient who has relapsed during pregnancy.
  - 7 Describe strategies for addressing weight gain in relationship to smoking.
  - 8 Describe application of the 5A's to help a patient deal with postpartum relapse.
  - 9 Apply the 5R's for a patient who is not ready to quit.
  - 10 Describe the effects of secondhand smoke exposure on the health of children.
  - 11 Apply the 5A's (full and abbreviated versions) for patients who are not pregnant.
  - 12 Describe the use of pharmacotherapy, counseling, and adjuncts to cessation, such as quit lines and fax referrals for patients who are not pregnant.
  - 13 Describe the risks associated with smoking on reproductive health, including the effects on the health of the woman and the newborn.
  - 14 Describe the neurophysiologic aspects of nicotine addiction.
  - 15 Describe the behavioral aspects of nicotine addiction, with emphasis on triggers and the predominant role of behavioral modification for smoking cessation.
  - 16 Discuss the importance of counseling combined with pharmacotherapy.
  - 17 Apply motivational interviewing for smoking cessation.
  - 18 List the core skills involved in motivational interviewing.
  - 19 Describe the use of Scales to elicit patient consideration about conviction and confidence regarding their commitment to behavior change.
  - 20 Describe the steps of implementing an office system for smoking cessation through the GAPS approach.
  - 21 Implement disease detection and prevention healthcare services (e.g., smoking cessation) to prevent health problems and maintain health.
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5A's, ask, advise, assess, assist, and arrange; 5R's, relevance, risks, rewards, roadblocks, and repetition; GAPS, goals for your practice, assessment of current services provided, planning how to improve those services, and start-up.